

# PATENT SPECIFICATION

DRAWINGS ATTACHED

L075.736



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## COMPLETE SPECIFICATION

### Improvements relating to Plates for Filter Presses, and to Filter Presses including such Plates

5 We, POLYSIUS S.A.R.L., of 13, Rue Auber Paris, 9, France, a French Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to filter-press plates.

10 The object of the invention is to permit ready installation and removal of filter cloths to and from filter plates, to provide an increase in the working life of the cloths, and ensure good sealing between the various filter-press plates when these are pressed together.

15 In accordance with the invention a plate for a filter press has a face covered by a filter cloth, said face having a peripheral groove which receives the marginal edge portion of said cloth, and a fillet located in said groove so that the cloth is trapped between the fillet and groove, the fillet being shaped and dimensioned to project from the groove prior to the plate being located in a filter press and pressurised.

25 One embodiment of the invention is shown by way of non-limiting example in the accompanying drawings, wherein:—

30 Figure 1 is a part elevational section through one edge of a filter-press plate;

Figure 2 is a schematic front view on a smaller scale of the same filter-press plate;

35 Figure 3 is a partial part-sectional view of one corner of the plate in Figure 2, in a plane parallel to that of Figure 2 and illustrating a detail of the embodiment; and

Figure 4 is a partial section illustrating a modification of the arrangement of Figure 1.

40 On referring to the drawings it is seen that the two faces of each filter-press plate each have a narrow peripheral groove 1 for housing a fillet 2 forming a continuous frame. Preferably, but not necessarily, the fillet 2 is

made of rubber or other elastically deformable material and is shaped in section generally 45 similarly to slot 1. The slot and the fillet are provided respectively with aligned semi-circular sectioned channels 3 and 4 opposite each other when the fillet is in place to comprise a substantially cylindrical housing adapted to 50 receive a locking element or pin 5.

8 represents the edge of the filter cloth covering each face of each filter-press plate, and as shown in the drawings, the edge 8 lines 55 the base of groove 1 and is held in place by compressing the fillet inside groove 1. Preferably the edge 8 of the cloth dips down at 9 so as to pass between pin 5 and the bottom of the channel 4 in fillet 2. The cloth is thus held firmly in place, without being able 60 to slip, because of the contact of the pin against the bottom of this channel.

In the locking position (figure 1), the outer face 6 of fillet 2 projects slightly beyond the plate by an amount  $e$  relative to the plane 65 PP' of the plate edge 7.

When the filter-press is closed, the fillet 2<sub>1</sub> of adjacent plate P<sub>1</sub> deformably engages the fillet 2 in plate p, which has the effect of ensuring the sealing of the common chamber 70 10 formed between each pair of adjacent plates. The fillet face 6 is thus forced back to 6', i.e. to the contact plane PP' of the plates which by abutment of their peripheral edges 7 thus limit the compression of fillets 2<sub>1</sub>, 75

The above shows that the pressure of the filter-press closing jack is transmitted not by the fillets but by the rigid undeformable marginal edge portions 7 of said plates p, P<sub>1</sub>, which edges 7 are located outside the groove. 80

At the edge of the area of the plate located inwardly of the groove, a rounded edge 11 is provided and this edge is stepped inwardly relative to plane PP' by the amount  $r$ , to 85 avoid the cloth jamming and being damaged.

Figures 2 and 3 show in detail how pins 5

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are installed. With each side  $2a, 2b, 2c, 2d$  of the continuous frame formed by fillet 2 is associated a pin  $5a, 5b, 5c, 5d$ . The channels 3, 4 provided in the fillet and in the filter plate groove respectively form blind housings, as shown at 12 in figure 3 as far as pin  $5b$  is concerned. At an opposite end these housings open to the exterior by a tapped passage 13 wherein is screwed the corresponding threaded end 14 of each pin. The pin ends comprise a knurled knob 15 sealingly pressed on to a joint 16 supported against a boss 17 in the plate. In this manner each housing 12 is sealingly closed by its pin.

The installation of a filter cloth may thus be readily effected by proceeding as follows:—

With the cloth applied to the two faces of a plate, the cloth edges are engaged and inserted into the corresponding grooves 1. The edge of the cloth in the groove is then covered by the fillet 2 introduced into the groove. A final operation comprises locking the fillet by threading the pins into the housings, then rotating their heads 15 to screw adjacent ends 14 into position. One may for example proceed in the order indicated by the arrows  $f_1, f_2, f_3, f_4$ .

As shown also by figure 3, each pin preferably has a tapered, e.g. scarfed or chamfered end 18 to facilitate insertion in the corresponding housing 12 without any danger arising of wedging the cloth edge.

Figure 4 shows a variation wherein the cloth edge has a bead 19 which is wedged between the groove base 20 and the innermost edge 21 of fillet 2.

According to a further variation, fillet 2 is of rigid material and is clad with a layer of rubber or the like which can be compressed to ensure the desired seal. The slot 1 and fillet 2 may also be given various shapes, part-circular, trapezoidal, etc. The fillet may also be affixed by a simple force fit in the plate groove.

#### WHAT WE CLAIM IS:—

1. A plate for a filter press, having a face

covered by a filter cloth, said face having a peripheral groove which receives the marginal edge portion of said cloth, and a fillet located in said groove so that the cloth is trapped between the fillet and groove, the fillet being shaped and dimensioned to project from the groove prior to the plate being located in a filter press and pressurised.

2. A plate as claimed in Claim 1 wherein the plate face area which is bounded by the peripheral groove is stepped inwardly of the marginal portion of the plate located on the opposite side of the groove.

3. A plate as claimed in Claim 1 or Claim 2 wherein the fillet and groove are provided with aligned channels and a locking element of complementary sectional shape to the two channels is located therein.

4. A plate as claimed in Claim 3 wherein the plate is provided with passages opening from its edges into the aligned channels for insertion therethrough of the locking elements.

5. A plate as claimed in Claim 4 wherein the said passages are tapped and the elements screw-engage therewith.

6. A plate as claimed in Claim 4 or Claim 5 wherein the locking elements are rods provided with tapered ends.

7. A plate as claimed in any of Claims 1 to 6 wherein the fillet is resilient.

8. A plate as claimed in any of Claims 1 to 6 wherein the fillet includes a resilient capping which projects out of the groove prior to the plate being located in a filter press and being pressurised.

9. A filter press comprising a plurality of plates as claimed in any of Claims 1 to 8.

10. A plate for a filter press substantially as hereinbefore described with reference to Figures 1 to 3 or Figure 4 of the accompanying drawings.

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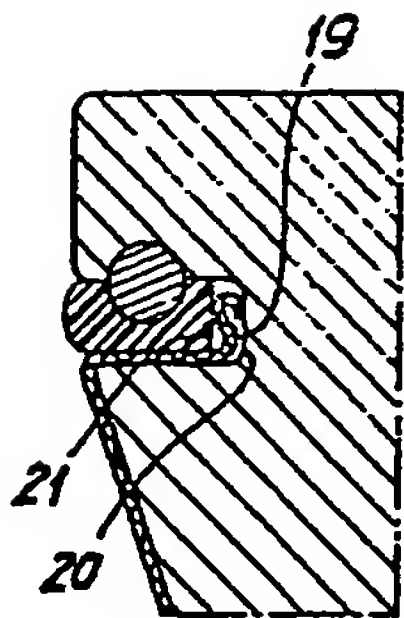
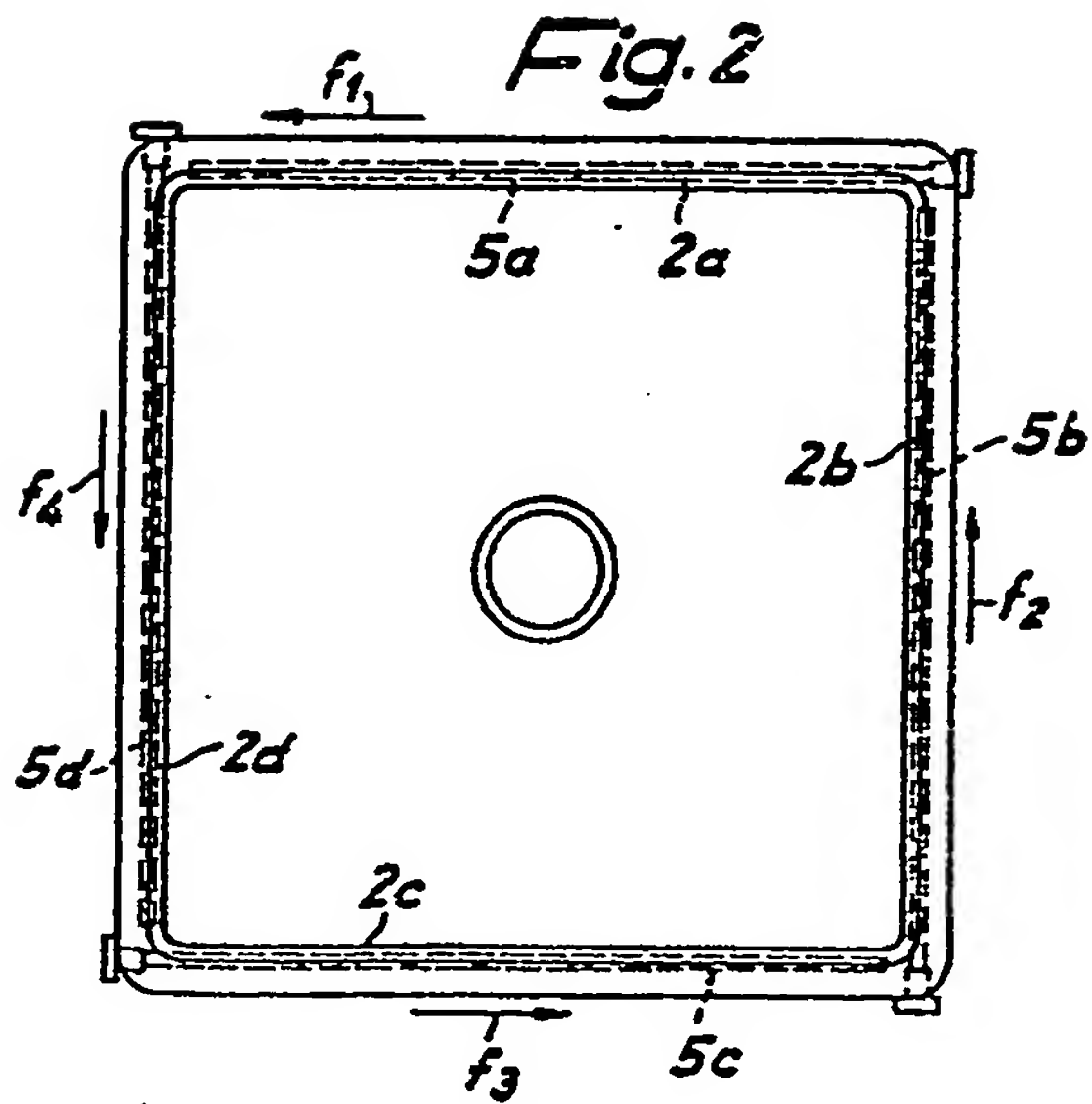


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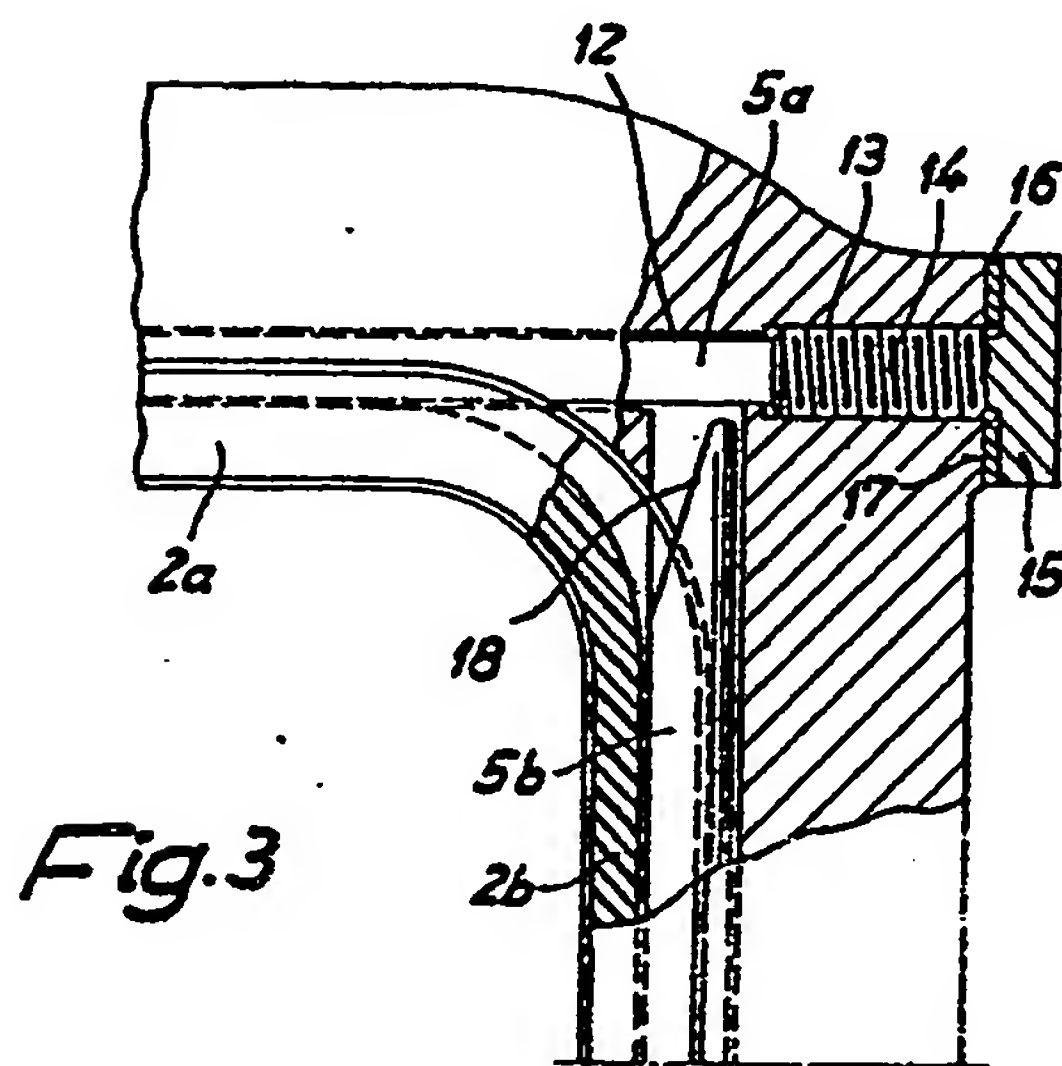
COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale  
Sheets 1 & 2



*Fig. 4*



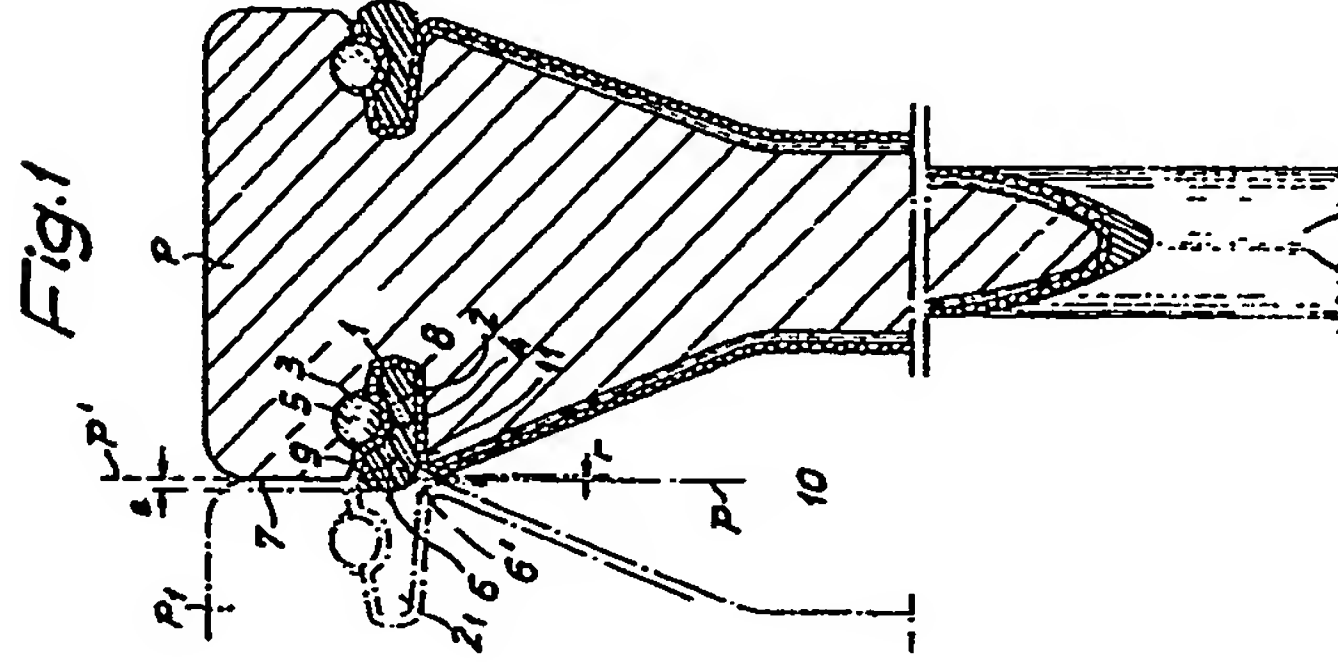


Fig. 1

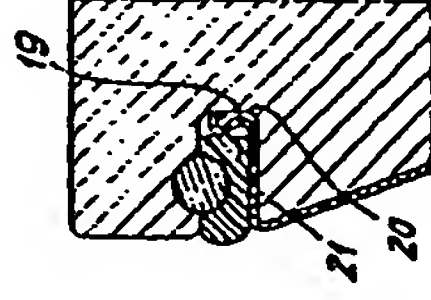


Fig. 4

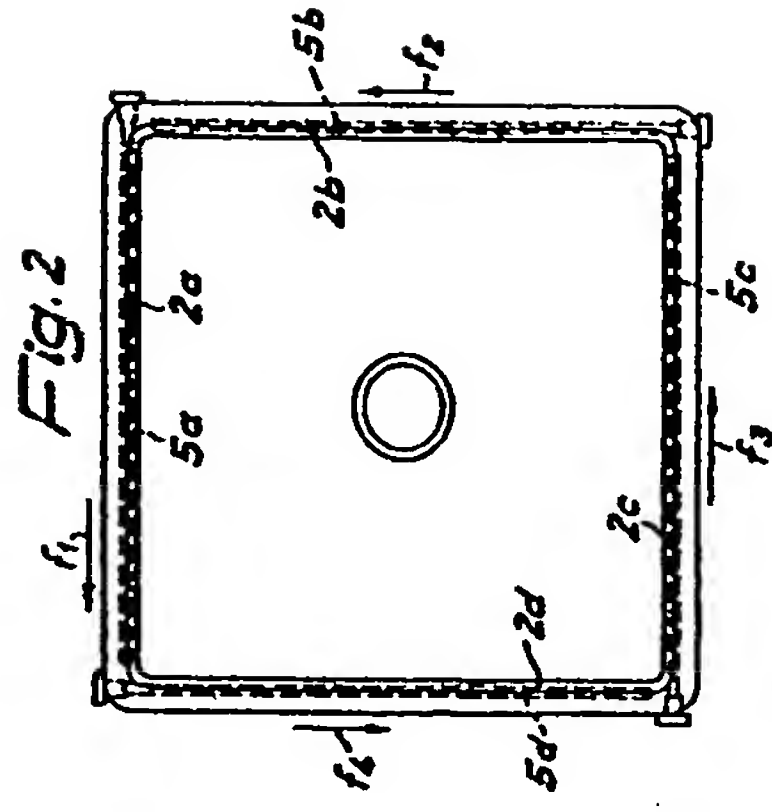


Fig. 2

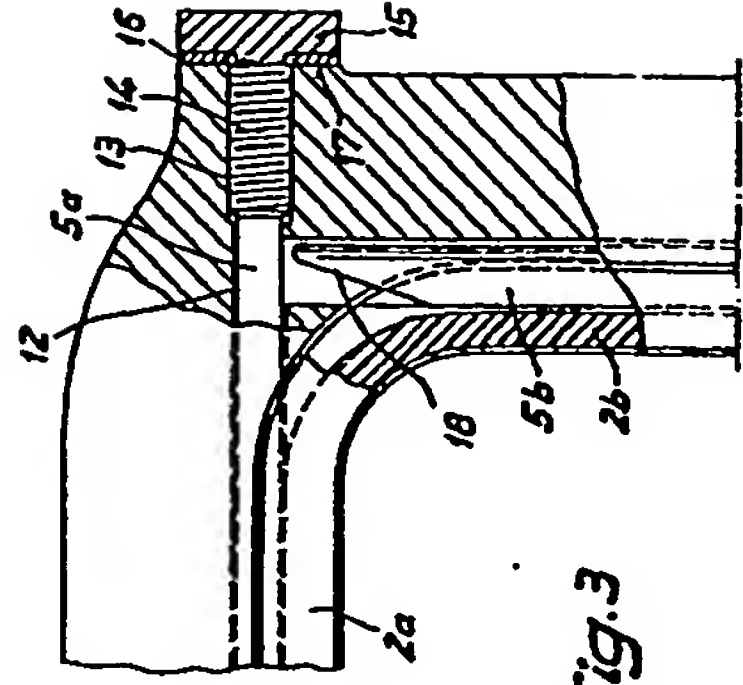


Fig. 3